

### **REMARKS/ARGUMENTS**

Applicants appreciate the Examiner's indication that claims 3-22 and 24-60 would be allowable if rewritten into independent form. Applicants have rewritten some of those claims into independent form such that based on the Examiner's indication they should now be fully allowable. To the extent, if any, that the Examiner's reasons for allowance are inconsistent with, add or omit claim limitations, applicants state that it is the combinations of claim elements as a whole that define the scope of protection.

In response to the "indefiniteness" rejection under 35 USC 112, applicants have amended rejected claims 1, 2, 3, 19, 31, 36, 37 and 59 to more particularly point out their invention. By incorporating all of the Examiner's suggestions, applicants believe they have removed this "indefiniteness" rejection.

Applicants thank the time the Examiner devoted to the 24 May 2005 telephonic interview. During the interview, the inventors Vladimir Kochergin and Phil Swinehart explained the features of their exemplary illustrative non-limiting disclosed implementation by explaining the problem they set out to solve and their disclosed solution. Mr. Swinehart explained, for example, that convergent or divergent light beams passing through prior art optical filters can cause the filter passband to shift significantly because the passing light sees different lengths. The inventors explained that the exemplary illustrative non-limiting approach described in the subject patent application that they developed propagates through use of waveguide modes. Such waveguide mode propagation reduces or eliminates the passband shift problem described above. See paragraph 86 of the subject patent application for example.

The inventors explained that the applied Feisst et al document (DE 100 63 151 B4 and US 2004/0069948) does not teach or suggest supporting waveguide modes. Rather, Feisst's photonic band gap structure supports Bloch mode of propagation, and cannot support waveguide mode propagation as applicants describe in their patent specification. The propagation of the light through the photonic crystal occurs not through the waveguide modes but through so-called "Bloch modes" around the bandgap. These modes are very different from waveguide modes in almost any aspect. They have different propagation constants, different structure, different type of localization, etc.

Thus, applicants explained that their disclosed exemplary illustrative implementation may appear to be similar in structure to Feisst's implementation, but works quite differently based on different optical phenomenon. In particular, Feisst's sensor is based on the slow group velocity, at some wavelengths, of a photonic bandgap structure. In contrast, applicants' disclosed exemplary illustrative implementation provides optical filtering in a waveguide array structure.

The Examiner recognized that the language of independent claim 1 "the plural waveguides each supporting at least one waveguide mode at the predetermined spectral wavelength" in combination with the other claim elements appeared to patentably distinguish over the Feisst et al reference. Feisst et al discloses use of a waveguide to channel light to the photonic band gap structure, but does not suggest operating the band gap structure itself in a waveguide mode. The Examiner stated that although claim 1 patentably distinguished over the applied reference, he would update his search upon receiving the present response. Accordingly, applicants respectfully request reconsideration and allowance.

KOCHERGIN et al.  
Appl. No. 10/686,520  
May 25, 2005

### Information Disclosure Statement

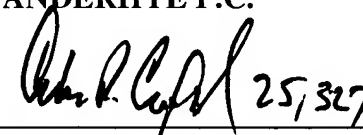
Applicants are resubmitting certain documents as requested by the Examiner. The Macleod document is a book submitted in commonly assigned copending application serial number 10/686,519. The undersigned does not have a duplicate copy of that book, so the Examiner is referred to the PTO file history of that related case.

All outstanding issues have been addressed and this application is in condition for allowance. Should any minor issues remain outstanding, the Examiner should contact the undersigned at the telephone number listed below so they can be resolved expeditiously without need of a further written action.

Respectfully submitted,

**NIXON & VANDERHYE P.C.**

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